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An Environmental Restoration Success Story:

Accelerating the RI/FS Process for the Old Radioactive Waste Burial Ground at the Savannah River Site

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Benefits Achieved at SRS:
Project Cost Savings = $5 million
Schedule Reduction = 2 years

The effort to accelerate assessment and decision-making at the ORWBG was facilitated by the DOE RI/FS peer review process. Under this process, an experienced team, composed of DOE, federal and state regulators, and expert consultants, brings lessons learned from around the complex to assist a site in streamlining and improving its assessment and cleanup activities. The peer review team helps the site to work with its regulators to build the support necessary to pursue innovative environmental restoration strategies. A fundamental component of most peer reviews is application of a set of streamlining "principles" identified and developed by DOE and EPA to improve cleanups conducted under RCRA and CERCLA.[1]

PROJECT BACKGROUND: The Old Radioactive Waste Burial Ground (ORWBG) is a 76 acre area that was used by the Savannah River Site (SRS) as a general disposal area for radioactive waste from 1952 through 1974. This entire area is now covered with four feet of clean fill. Data from monitoring wells indicate that contaminants from the waste burial ground, including volatile organic compounds, tritium, lead, and cadmium, have migrated through the soil and impacted the underlying ground water.

PURPOSE OF THE PEER REVIEW: The ORWBG covers a large area and is contaminated with multiple constituents which are present at varying concentrations and in different combinations throughout the site. Because of the complexity of this site, the investigation and assessment required prior to initiating remediation was expected to be costly and time-consuming. The ORWBG project manager and regulators, however, recognized that the existing information available through extensive waste disposal records, along with ground water monitoring data, could be sufficient to support the remedy selection process. SRS initiated the peer review process to obtain assistance in: 1) reaching consensus with regulators on the extent to which existing information should be used to support decision-making; and 2) determining the most effective way to use existing information to assess this complex site and simplify the ORWBG RI process.

RESULTS: The baseline cost and schedule for the ORWBG RI process was reduced by $2 million and 2 years. Evaluation of existing information allowed the site and its regulators to: 1) reach agreement that sufficient risk exists to warrant a response without documentation of a comprehensive, quantitative baseline risk assessment; and 2) identify the likely response action for the ORWBG. As a result, the site and its regulators determined that additional data collection is unnecessary and that therefore documentation can be streamlined by combining the relevant portions of the originally separate RI work plan, RI Report, and BRA report. Further, the site and its regulators simplified the evaluation and decision-making for this complex site by focusing on defining the problem and identifying the likely response action as early as possible.

IMPROVEMENTS IN THE ORWBG RI PROCESS:

I. Expedited decision-making. The site was able to quickly develop the RI strategy for the ORWBG by directly involving regulators in deciding how the RI should be conducted and used to support the FS. Rather than working separately from its regulators and communicating through documents, the site formed a core team comprising all individuals with decision-making authority for the project: the ORWBG project managers from DOE, EPA, and the South Carolina Department of Health and Environmental Control (SCDHEC).

[1] These streamlining principles, including use of a core team, problem definition, early identification of the likely response action, and uncertainty management, are presented in the "Principles of Environmental Restoration" course. This course, provided by DOE's National Environmental Training Office (NETO) in conjunction with EM-43, EH-413, and EPA, can be made available to field ER programs. For more information, please contact NETO's Nick Deloplane at (803) 725-0845.

During a one day meeting, the core team reached consensus on all key decisions necessary to determine the appropriate scope and direction for the RI (e.g., data collection needed, documents required). DOE technical staff and contractors and the HQ peer review team provided input and guidance to the core team. Because all core team members had decision-making authority for their agencies, the RI strategy was quickly granted concurrence, SRS' FFA milestones were modified, and the site was able to begin executing the strategy.

By using a core team approach to reach consensus on the RI, SRS and its regulators established a precedent that will facilitate decision-making throughout the ORWBG project. [2]

II. Reduced data collection. The core team was able to define the problem for the ORWBG (i.e., the condition requiring a response action) by evaluating existing information. This information was sufficient for the core team to decide that: 1) surface contamination is not an issue of concern because there is clean-fill covering the entire area; and 2) migration of contaminants from the buried waste into the underlying groundwater poses an unacceptable risk and therefore requires a response action.

The team was able to make these decisions by using information from disposal records and ground water monitoring wells to construct a conceptual site model for the burial ground. Using this model, the core team evaluated the sources, pathways, and potential receptors of contaminants from the ORWBG. Because existing information was sufficient to evaluate site conditions and assess risk, the core team decided that the site does not need to: 1) collect additional data to characterize the site; or 2) conduct a baseline risk assessment to determine if action was necessary.

III. Streamlined documentation. Because existing information was sufficient to decide that action is needed, the core team determined that a baseline risk assessment report and a traditional remedial investigation report are not necessary; rather, the team decided that a single report can effectively document site conditions and support the ORWBG FS. This 'enhanced work plan' will: 1) document the existing information that establishes the problem and the need for a response action; 2) evaluate risk; 3) define remedial action objectives; and 4) identify the likely response action. This reduction in documentation decreased both cost and schedule.

IV. Focused feasibility study. Once the problem was agreed upon, the core team was able to identify a single likely response action. Based on its understanding of site conditions, the team agreed that a long-term cap was the preferred option for reducing the risk posed by the ORWBG. The core team also decided that areas of soil with higher contaminant concentrations should be identified and evaluated to determine if these "hot spots" warrant a selective response (i.e., either excavation and offsite disposal or in situ stabilization) to augment the long-term cap.

Because the core team decided that other potential response actions should be eliminated from consideration, these alternatives do not need to be carried through to the FS. The team agreed that because of the volume of soil in the burial ground, full excavation/disposal and complete stabilization are not feasible. Further, full excavation or in-situ treatment would require removal of the four foot layer of clean fill layer covering the area which could pose a risk to the worker health and safety.

OPPORTUNITIES FOR FURTHER IMPROVEMENT: In order to further focus the FS, the core team is developing a process through which it will use existing information to identify those hot spots that may warrant a selective response and should therefore receive further evaluation in the FS. Through this process the core team can eliminate from consideration those hot spots that do not require further evaluation before the FS is initiated.

The core team has already agreed that the following criteria that will be used to determine if a selective response to a hot spot is warranted: 1) concentration (i.e., curie content), 2) form (e.g., liquid, solid), 3) mobility, 4) certainty of location in trench, and 5) percentage of risk reduction achieved by addressing hot spot. The core team is now working to reach consensus on a process to use existing information to evaluate hot spots based on these criteria.

For technical information on this project call: Bert Crapse, DOE, at (803) 725-9866; Jeff Crane, USEPA Region IV, at (404) 562-8546; or Keith Collinsworth, SCDHEC, at (803) 896-4055.

DOE is planning to conduct additional peer reviews and will be reviewing requests from sites interested in participating in this program. In addition, limited HQ technical assistance is available for other types of streamlining projects. For further information, please contact Richard Dailey, EH-413, at (202) 586-7117 or Steve Golian, EM-43, at (301) 903-7791.

[2] To obtain fact sheets describing the ER principles used in the SRS Peer Review, including the core team, problem definition, and early identification of the likely response action, please contact Steve Golian, EM-43 at (301) 903-7791 or Richard Dailey, EH-413, at (202) 586-7117. Information may also be obtained from the EH-41 web site: http://tis-nt.eh.doe.gov/oepa.